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Review research paper

TEACHING TECHNICAL VOCABULARY: ARE MATCHING EXERCISES THE THING OF THE PAST?

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Abstract. *This article examines the effectiveness of matching exercises as a method for teaching technical vocabulary within an ESP context. More specifically, it investigates the advantages of matching exercises in terms of their efficiency to help students acquire technical vocabulary, students' perception of their efficiency, and student motivation, and compares the impact of modality on the aforementioned elements. The research describes two versions of an experiment conducted over two academic years on psychology students. Whereas written definitions were used in the first version, in the second version, definitions were presented in an oral form. The data were collected through questionnaires administered at the end of the class. The results indicate that matching exercises are, indeed, a valuable tool for the study of technical vocabulary, particularly receptive vocabulary. The participants generally evaluated the matching exercises as useful for vocabulary acquisition although their motivation towards such exercises was moderate. Moreover, the visual modality consistently outperformed the auditory modality in terms of efficiency, student perception, and student motivation. Despite some limitations, this study highlights the potential of matching exercises in teaching technical vocabulary. Matching exercises can serve as effective supplementary activities in ESP classes, allowing students to enhance their grasp of specialised language.*

Key words: *ESP, technical vocabulary, specialised vocabulary, modality, language learning and teaching, matching exercises*

1. INTRODUCTION

In 1962, Barber (p. 37) wrote that ESP practitioners do not normally teach technical terms to their students due to the heterogeneous nature of ESP classes and due to the fact that students acquire specialised vocabulary by themselves while "learning the subject." Similarly, Hutchinson and Waters (1987: 1708-1712) stated that technical vocabulary, proportionately less present in "scientific and technical writing", was less problematic to ESP students who could infer the meaning of such vocabulary from "a knowledge of the subject matter and common word roots." Dudley-Evans and St John (1998, p. 80-81) reiterated the idea: "…in general, we agree that it should not be the *responsibility* of the ESP teacher to teach technical vocabulary…" Therefore, as it seems that technical vocabulary does not represent any particular difficulty for ESP learners and as, on the

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contrary, ESP practitioners are more likely to struggle with such vocabulary due to a lack of "specialist subject knowledge" given their original training (Anthony, 2011, p. 6; Nation, 2001, p. 307), the teaching of technical vocabulary is sometimes omitted from ESP curricula.

Nevertheless, it is noteworthy to mention that even though it is often believed that technical vocabulary should not be the focus of ESP teaching, contrary to semi-technical and core vocabulary, frequently employed in scientific and technical literature, the ESP practitioner's role is to ensure that students understand technical vocabulary. Moreover, more recent research highlights the importance of technical vocabulary and the necessity to help students tackle the difficulties associated with it (Hirsh & Coxhead, 2009; Nation, 2001). This article adheres to the second category of research and examines how technical vocabulary can be efficiently taught and learnt in an ESP context. In particular, it explores the advantages of matching exercises and offers a comparison of how the modality type impacts the efficiency of such exercises and student motivation.

In the first part of the article, we shall define technical vocabulary, describe its different types and approaches to teach it. The second part will present the experiment that was conducted in order to examine the role of matching exercises in the acquisition of technical vocabulary. Next, we shall present the results of our experiment concerning the efficiency of matching exercises, students' perception of their efficiency, student motivation to do such exercises, and the impact of the modality on the aforementioned elements. Finally, we shall discuss how the cognitive overload, confirmation bias and correlation between the students' perception of the efficiency of matching exercises and the ability to provide correct answers might interfere in the interpretation of the results; we shall conclude the paper by explicating the limitations of the present study and by providing a few final remarks concerning the practical implementation of matching exercises.

2. Technical Vocabulary and Ways to Teach it

This section proposes a definition of technical vocabulary and explores various methods to teach such vocabulary.

2.1 What is technical vocabulary?

In general English, it is common knowledge that vocabulary is crucial in order to understand and use a language (Hirsh & Coxhead, 2009). Hence, in an ESP context, mastering ESP vocabulary should be of a similar importance. Before continuing any further, it seems important to understand what ESP vocabulary stands for.

Different authors use different terms to refer to ESP vocabulary: special purpose vocabulary, specialised vocabulary, technical vocabulary, sub-technical vocabulary and semi-technical vocabulary (Coxhead, 2013). However, all these terms "usually refer to the vocabulary of a particular area of study of professional use" (Coxhead, 2013, p. 116). In a recent work, Woodrow (2018, p. 43) tried to bring more clarity to these terms by providing a clearer classification of ESP vocabulary based on the research in the field (*cf.* Nation, 2001, pp. 302–303). According to her, there are three categories of ESP vocabulary: technical vocabulary, semi-technical vocabulary, and general vocabulary. The first category, also known as specialist or specialised vocabulary, is composed of

"vocabulary specific to the discipline and not widely used or understood outside this area" (*op. cit.*). The second category, also referred to as sub-technical vocabulary[1], consists of vocabulary "commonly used in the discipline which may have a specific usage or meaning" (*op. cit.*), meaning that such vocabulary can be found outside a particular field, but its meaning may vary. Finally, the last category refers to everyday vocabulary "necessary for any communication in the language" (*op. cit.*) (see Fig. 1).

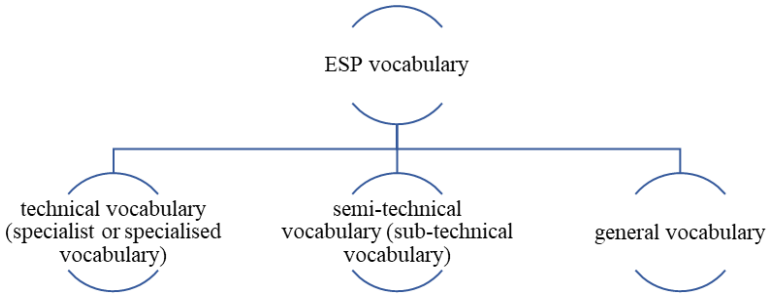

Fig. 1 Types of ESP vocabulary

While this tripartite distinction makes sense and the categorisation of vocabulary items into the three categories is almost always possible, the concept of the degree of technicalness (Nation, 2001, p. 316–317) seems to be more appropriate to apply. Words can be placed on the continuum depending on the degree of their technicalness. Level-1 vocabulary is used both inside and outside a particular field even though its use is more frequent in the field, and the meaning bears "little or no specialization" and can be precised by field specialists in more detail (*op. cit.*). Even if level-2 items are also employed inside and outside a particular field, they contain a specific meaning and are more frequently used inside the given field. The vocabulary of level 3 is more specialised and does not have the same meaning when used outside or inside the field. Level-4 elements are almost never used outside the field, and their meaning is not readily inferred by non-specialists.

To make the distinction more palpable, we can illustrate it with a few examples drawn from the field of psychology. The term *depression* belongs to Level 1 as it is used both outside and inside the field of psychology: for outsiders, it means "a medical condition that makes you very unhappy and anxious and often prevents you from living a normal life" (Longman) or "a feeling of sadness that makes you think there is no hope for the future" (*op. cit.*) while for insiders its meaning is more detailed in terms of symptoms:

> a negative affective state, ranging from unhappiness and discontent to an extreme feeling of sadness, pessimism, and despondency, that interferes with daily life. Various physical, cognitive, and social changes also tend to co-occur, including altered eating or sleeping habits, lack of energy or motivation, difficulty concentrating or making decisions, and withdrawal from social activities. It is symptomatic of a number of mental health disorders. (American Psychological Association)

[1] Nation (2001, p. 24) precises that sub-technical vocabulary is also academic vocabulary, which contains formal vocabulary and not necessarily technical vocabulary.

The term *storage* could illustrate Level 2 of technicalness. The word is used in general English to principally refer to "the process of keeping or putting something in a special place while it is not being used" (Longman) whereas in psychology, *storage* signifies "the state of an item that is retained in memory, after encoding and before retrieval" (American Psychological Association). Although the word has a particular meaning in psychology, it can be easily accessed through its meaning in general English. The term *illustrator* exists in general English and in English for psychology; nevertheless, the meanings have nothing in common: in general English, an illustrator is "someone who draws pictures" (Longman) whereas in psychology, it refers to "a gesture that accompanies speech and that depicts, clarifies, or amplifies what is being said" (Colman, 2015, p. 365). Finally, the term *ahylognosia*, which stands for a "loss or impairment of the ability to recognize and understand the nature of objects through touch" (American Psychological Association), is undoubtedly part of the technical vocabulary as it is not employed outside the field of psychology.

2.2 Ways to teach vocabulary

Vocabulary is essential to understand and to use a language (Hirsh & Coxhead, 2009); hence, the distinction between receptive and productive vocabulary should be made when teaching vocabulary. Whereas the former refers to the passive use of vocabulary in reading or listening activities, the latter refers to the vocabulary that a person actively uses when speaking or writing (Woodrow, 2018). Nation (2007) put forward an idea that language courses should represent a balanced environment consisting of four strands: meaning-focused input (listening and reading), language-focused meaning (direct study of linguistic elements), meaning-focused output (speaking and writing), and fluency development – where each strand should occupy "roughly the same amount of time… to cover both receptive and productive skills" (p. 8). The four-strand principle can be applied to the teaching and learning of vocabulary: vocabulary can be studied through listening and reading tasks as well as speaking and writing ones, fluency enhancing activities, and through language-focused instruction.

Given various language teaching and learning approaches, the teaching of vocabulary can be done in a number of different ways. Cook (2008, pp. 62–63), for example, explains that the use of pictures is typical of the audio-lingual method, translation is common in traditional language teaching, and no particular techniques are used in the communicative approach or task-based learning and teaching as the meaning "is built up out of hearing it [the word] in different interactional contexts over time." According to the lexical approach[2] by Lewis (2008, pp. 89–91), basic exercises[3] are identifying chunks, matching, completing, categorising, sequencing, and deleting. Anchored in cognitive principles of learning, Gairns and Redman's proposition (1986, pp. 103–170) advances five types of vocabulary activities: (1) activities with visual aids, (2) reading-based

[2] In the lexical approach, "language consists of chunks which, when combined, produce coherent text" (Lewis, 2008, p. 7).

[3] In this paper, we respect the distinction between *activity*, *exercise*, and *task* as it is articulated by Richards and Schmidt (2010, pp. 9, 208, 584): whereas *activity* means "any classroom procedure that requires students to use and practise their available language resources", *task* refers to any "activity which is designed to help achieve a particular learning goal", and *exercise* refers to any "activity that is designed to practise a learning item."

activities, (3) teacher-designed contexts and dictionary-based activities, (4) speaking activities, and (5) games, questionnaires and problem-solving activities. In addition to the activities aiming to present new vocabulary, Thornbury (2002, pp. 93–105) suggested that there should be integration activities to help learners integrate it into their mental lexicon. In his mind, these activities could be grouped into three categories: decision-making tasks, production tasks, and games (see Fig. 2).

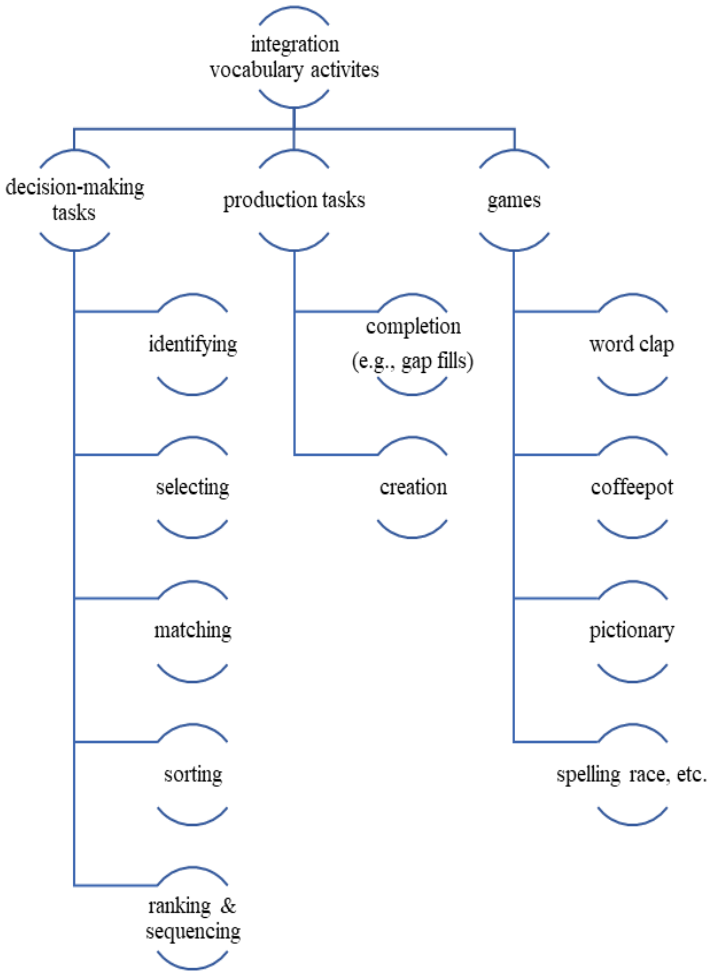

Fig. 2 Thornbury's three types of integration activities[4]

All the previously mentioned types of activities and tasks deal with general vocabulary; the literature is much scarcer when specialised vocabulary is concerned. One

[4] The decision-making tasks are presented from the least cognitively demanding to the most cognitively demanding tasks (Thornbury, 2002, p. 93).

of the rare references in relation to science-specific vocabulary comes from Hirsh and Coxhead (2009), who distinguished ten ways to focus on such vocabulary: split information tasks (*cf.* jigsaw technique), investigation of the company words keep in texts, ranking activities, focusing on aspects of words through direct instruction[5], use of strategies to enhance vocabulary learning, use of dictionaries to explore aspects of target words, fluency building, summarising activities, wider reading and listening in the sciences, and learning through assessment (pp. 7–12).

As the reader might have noticed, various classifications of vocabulary activities and tasks exist depending on the theoretical approach adopted by the author(s), and unsurprisingly, certain overlap, or even complementarity[6], between the classifications can be observed.

2.3 Matching exercises

Matching exercises have been part of general English and ESP studybooks for a long time; they are present, for instance, in *Advanced grammar in use* (Hewings, 2005), *Advanced language practice* (Vince, 2003), *New Headway: Pre-intermediate* (Soars & Soars, 2000), *New inside out* (Kay & Jones, 2009), *English vocabulary in use* (McCarthy & O'Dell, 2001), *English phrasal verbs in use* (McCarthy & O'Dell, 2004), *English for the oil industry* (Frendo & Bonamy, 2011), *English for logistics* (Grussendord, 2009), *Basic English for computing* (Glendinning & McEwan, 1999), *Academic encounters: Life in society* (Brown & Hood, 2002), *Studying English for psychology: A practical guide* (Makeieff, Jalliffier-Merlon & Zouaoui, 2019), *English for psychologists* (Kerridge & Lieury, 1991), etc. These examples show that even though they are used in a wide range of teaching and learning settings, they are principally employed to teach grammar, general vocabulary, or specialised vocabulary.

According to Thurnbury (2002), matching exercises involve:

> first recognising words and then pairing them with – for example – a visual representation, a translation, a synonym, an antonym, a definition, or a collocate. (p. 97)

To complete this definition, we shall refer to Nation (2001), who added a grammatical component to matching exercises as the latter can ask learners to match two halves of a sentence.

In vocabulary teaching, matching exercises can be advantageous to the study of productive as well as receptive vocabulary (Nation, 2001). As the vocabulary is studied deliberately, they represent language-focused learning (Nation, 2007), they allow to focus on particular aspects of a word through direct instruction (Hirsh & Coxhead, 2009), they are dictionary-based exercises (Gairns & Redman, 1986), which belong to the lexical approach (Lewis, 2008).

Despite the quasi-omnipresence of matching exercises in English studybooks, their efficiency has not been proven yet, at least not to our knowledge. Given innovative trends

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[5] Moreover, the advantages of explicit teaching and learning of vocabulary are highlighted by several researchers in ESP and EAP field (*cf.* Tokar & Fainman, 2018; Vega, 2016).

[6] Nation (2001, p. 28) wrote that specialised vocabulary, like any high frequency vocabulary, "should be taught and studied in a variety of complementary ways." This suggestion can be extended to vocabulary in general, and the usefulness of the complementarity approach to teaching any type of vocabulary can be underlined (Vega, 2016).

in education and in an ESP setting in particular (Anthony, 2018; Woodrow, 2018), the socio-constructivist approach to teaching and learning languages has been gaining in popularity: task-based, problem-based, project-based approaches as well as case studies. One of the strengths of these approaches lies in the fact that they allow for incidental learning, *i.e*., unplanned or unintentional learning (Sharples et al., 2015), or implicit learning, *i.e*., learning where learners are not necessarily aware that learning is happening as it occurs "naturally, simply and without conscious operations" (Krashen, as cited in Ellis, 1999, p. 360), to take place. Indeed, matching exercises represent explicit learning, thereby belonging to the traditional approach to teaching and learning, and thus, should be efficient as "the material to be learnt is relatively 'simple'" (Ellis, 1999, p. 642).

In the next section, we shall examine whether matching exercises are efficient to study technical vocabulary and whether students appreciate such exercises and find them useful to acquire specialised vocabulary.

3. METHODS

3.1. Context and participants

The present study is the by-product of the PhD research we conducted in 2017-2021 on ESP teaching where we tested the efficiency of the specialisedness-based approach (Van der Yeught, 2016) in terms of knowledge acquisition and student motivation (Lyu, 2017). In order to attain the objectives of this research, we designed an English for psychology course into which we integrated traditional classroom activities together with the activities mimicking those that psychologists carry out in their professional lives. Amongst traditional activities, there were matching exercises, multiple choice, true-or-false, open-ended questions to test reading and/ or listening comprehension; the experimental activities consisted primarily of case studies, projects, and problems. However, the activities, both control and experimental ones, were all content-based and were always in relation to the field of psychology.

Approximately 200 psychology students pursuing their first master's degree at the University of Liège (Belgium) participated in the experiment in 2018-2019 and 2019-2020. The course consisted of ten three-hour teaching modules, each of which was based on a particular psychology-related topic. The matching exercises were designed for two modules: a module on age estimation and agnosia and a module on memory. The former consisted of three activities whereas the latter was comprised of four.

3.2. Instruments

In order to measure the efficiency of the matching exercises and students' motivation as well as their perception of the efficiency of such exercises, we administered questionnaires[7] at the end of each class. The efficiency of the matching exercises was evaluated through open-ended and multiple-choice questions for productive and receptive vocabulary respectively (Fig. 3). The question "Which activity was the most interesting?[8]" was meant to measure

[7] The Socrative platform was used to administer the questionnaires.

[8] For instance, in a recent study on the acquisition of medical vocabulary, Zafirovska and Xhaferi (2022) asked the participants to choose the vocabulary activity they liked the most and found out that only 8.7% of the students preferred matching exercises.

student motivation in relation to the activities present in the module, and the question "Which activity taught you most in terms of technical vocabulary?" permitted to analyse the students' perception of the efficiency of the activities offered in the module.

3.3. Experiment 1

In 2018-2019, the matching exercise in the module on age estimation and agnosia contained 13 definitions (Appendix A) whereas the matching exercise in the module on memory consisted of 18 definitions (Appendix C). All the definitions were taken from psychology books (Bauer, 2006; Baugh, Desanghere & Marotta, 2010) and were presented in a written form. The questionnaire contained one multiple-choice question to test the acquisition of receptive vocabulary and one open-ended question to test the acquisition of productive vocabulary. Figure 4 illustrates the questions used: questions 19 and 20 were used in the module on age estimation and agnosia whereas questions 8 and 9 – in the module on memory.

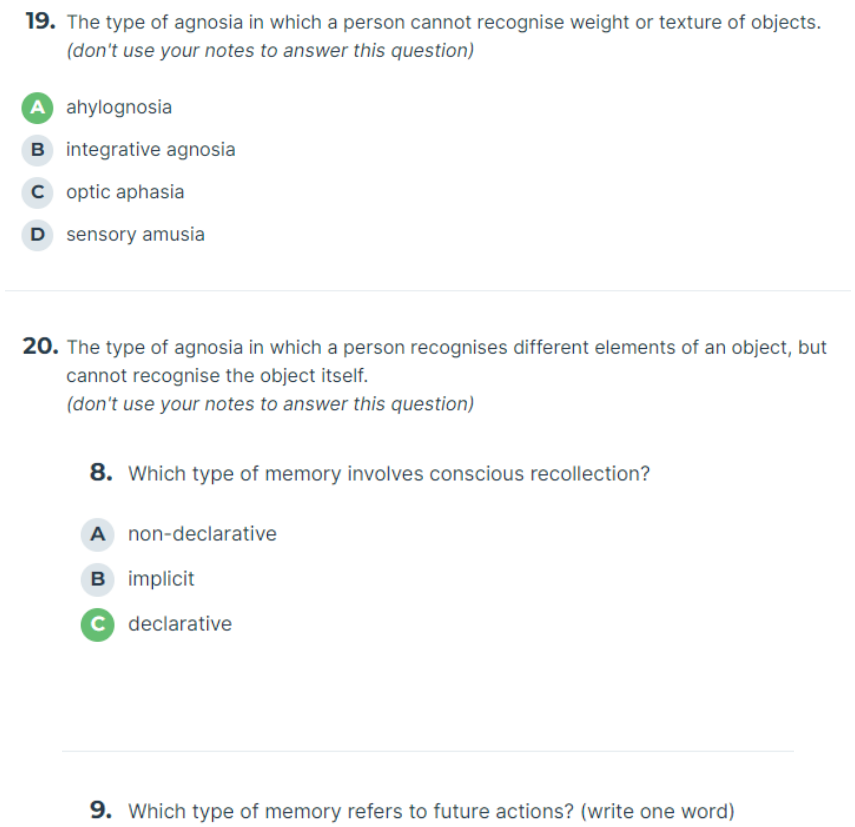

Fig. 3 Measurement of the efficiency of matching exercises (2018-2019)

3.4. Experiment 2

In 2019-2020, in order to diversify the course content and decrease the amount of written text, we decided to modify the modality in which the matching exercises were presented: we asked a native speaker to record the definitions[9] of the matching exercises (Appendices B & D). Moreover, recent research shows that multimodal learning, which allows "instructional elements to be presented in more than one sensory mode" could bring positive results (Sankey, Birch & Gardiner, 2010, p. 853).

According to psychologists, a sensory mode, also called sensory modality, can impact the presentation of information – the phenomenon known as modality effect (Colman, 2015, pp. 471, 686). For instance, when simple verbal information is presented through the auditory modality, better immediate recall of the last part of a message is observed; when complex verbal information is presented through the visual modality, better long-term recall is documented (*op. cit.*).

Although some researchers believe that spoken and written languages are treated similarly, that is "as a general process with little room for modality-specific effects" (Wolf, Muijselaar, Boonstra & de Bree, 2018, p. 1759), it seems intuitive to imagine that the two types of language undergo different cognitive processes. Indeed, the advances in neuropsychology show that to understand spoken language, words first pass through the auditory area to reach Wernicke's area whereas written language is processed through the visual area and then the angular gyrus (Nolen-Hoeksema, Fredrickson, Loftus & Wagenaar, 2009, p. 50). Moreover, spoken language, presented through the auditory modality, activates the processes of the whole brain whereas written language, presented through the visual modality, rather activates the left hemisphere of the brain (Buchweitz, Mason, Tomitch & Just, 2009). The last element to consider is the working memory, responsible not only for temporary storage of information, but also for its simultaneous manipulation. Being of a limited capacity, the working memory can be easily saturated (Tindle & Longstaff, 2015, p. 147). Even though the visual modality represents a more challenging task for the working memory as the former adds more workload to the latter, the auditory modality associated with note-taking could be as challenging.

As the items of the questionnaires were preserved, the modality change allowed for a more detailed analysis of the matching exercises after the data were collected in 2019-2020.

4. RESULTS

4.1. Overall efficiency of the matching exercises

The results we present in this section were calculated on the basis of the number of the correct answers provided for each question testing the acquisition of technical vocabulary. The overall percentage of the correct answers for the two years of the experiment was 56% with 42% of the correct answers to the questions related to age estimation and agnosia and 70% of the correct answers to the questions related to memory (Table 1). The results are significantly better in the memory condition: this difference might be due to the fact that the students were

[9] The matching exercise in the module on memory contained 16 definitions, instead of 18 used in 2018-2019: we eliminated *declarative* and *non-declarative memory* as the two are synonyms of *explicit* and *implicit memory* respectively.

more familiar with the subject on memory as it is one of the key topics in psychology and that they are more likely to have extensively read the memory-related literature in English.

Table 1 Efficiency of matching exercises

Topic	No. of correct answers
Age estimation and agnosia	106/253 (42%)
Memory	161/231 (70%)

The first number corresponds to the number of the students who provided the correct answers; the second number refers to the total number of the students who filled in the questionnaire.

4.2. Students' perception of the efficiency of matching exercises

When asked which activity of the module allowed for better acquisition of technical vocabulary, slightly over 50% of the students chose the matching exercises. The analysis per topic shows that 48% of the students in the age and agnosia condition stated that the matching exercise was the most useful in terms of the technical vocabulary acquisition in comparison to the other activities offered in the module, and that 54% of the students in the memory condition reported the usefulness of the matching exercise (Table 2).

Table 2 Students' perception of the efficiency of matching exercises

Topic	No. of the students
Age & agnosia	121/253 (48%)
Memory	125/231 (54%)

4.3. Productive vs receptive technical vocabulary

When we compared the results of multiple-choice questions (receptive vocabulary) with open-ended questions (productive vocabulary), we obtained quite straightforward results: the students provided much better results on multiple-choice questions (Table 3). In the agnosia condition, 58% of the students correctly answered the multiple-choice question whereas only 23% managed to answer the open-ended question. In the memory condition, 72% of the students provided the right answer to the multiple-choice question whereas 59% correctly answered the open-ended question. However, the difference between the two in the memory condition is less pronounced.

Table 3 Acquisition of productive vs receptive technical vocabulary

Topic	Receptive	Productive
Age & agnosia	147/254 (58%)	58/254 (23%)
Memory	161/224 (72%)	133/224 (59%)

4.4. Student motivation

To test student motivation in relation to matching exercises, we asked the participants to indicate the most interesting activity of the module. In particular, this question aimed

at looking into students' intrinsic motivation. Only 16% of the respondents reported that the matching exercises were the most interesting ones.

4.5. Modality

As a reminder, in 2018-2019, the matching exercises contained written definitions, so the modality used was visual whereas in 2019-2020, the definitions were presented in an oral form, so the auditory modality was employed. Hence, in order to analyse the effect of modality on the study of technical vocabulary, what we need to do is to compare the data obtained in 2018-2019 and 2019-2020.

First, we propose to reexamine how the modality intervenes in the efficiency of the matching exercises. In both modules, the same trend can be observed: the number of the correct answers decreased almost by 20% when the auditory modality was used (Table 4).

Table 4 Modality vs efficiency of matching exercises

Topic	Visual modality	Auditory modality
Age estimation and agnosia	68/137 (49%)	38/116 (33%)
Memory	106/133 (80%)	55/98 (56%)

Second, the comparison of the data shows that in the visual modality condition, 65% of the students reported that the matching exercise was the most useful to acquire technical vocabulary. However, the number was almost reduced by a half when the auditory modality was applied (Table 5).

Table 5 Modality vs students' perception of the efficiency of the matching exercises

Modality	No. of the students
Visual	176/270 (65%)
Auditory	73/214 (34%)

Third, in terms of the acquisition of productive and receptive vocabulary, both visual and auditory modalities are more advantageous for the acquisition of receptive vocabulary even though the difference of the acquisition of the two types of vocabulary is more accentuated in the auditory modality condition. In general terms, the visual modality yields significantly better results for the acquisition of both receptive and productive vocabulary. In addition, in comparison with receptive vocabulary, productive vocabulary seems to benefit even more from the visual modality (Table 6).

Table 6 Modality vs productive/ receptive technical vocabulary

Modality	Topic	Receptive	Productive
Visual	Age & agnosia	90/138 (65%)	44/138 (32%)
	Memory	106/126 (84%)	105/126 (83%)
	Overall	196/264 (74%)	149/264 (56%)
Auditory	Age & agnosia	57/116 (49%)	14/116 (12%)
	Memory	55/98 (56%)	28/98 (29%)
	Overall	112/214 (52%)	42/214 (20%)

Finally, in what concerns student motivation, in the visual modality condition, 20% of the students said they preferred the matching exercise to the other activities of the module whereas only 11% of the students expressed their preference towards the matching exercises when the auditory modality was used (Table 7).

Table 7 Modality vs student motivation

Modality	No. of the students
Visual	20%
Auditory	11%

5. DISCUSSION

Even though matching exercises seem to be relatively useful for the study of technical vocabulary, a few elements in particular are worth further discussion.

First, while choosing the modality for matching exercises, it is important to keep in mind that the visual modality produces much better results at all levels: the efficiency of such exercises, students' perception of their efficiency, and student motivation. This could be explained by the cognitive overload related to the working memory. Indeed, we previously mentioned (section 3.4) that the auditory modality associated with note-taking could make the accomplishment of a task more difficult.

Second, students' perception of the efficiency of matching exercises appears to correlate with their ability to provide correct answers, which could mean either that the students' perception reflects the real knowledge acquisition, or that the inability to provide correct answers impacts students' attitudes towards the exercise.

Third, while students believe that matching exercises are useful for vocabulary acquisition, they are not particularly motivated to do them. Although the analysis of all the data collected for our PhD revealed that incidental and implicit vocabulary learning is more efficient than matching exercises, the students felt that the matching exercises and explicit vocabulary learning were more beneficial to them. We could only hypothesise that the confirmation bias (Groome et al., 2014) was at work: the students were accustomed to such learning and they had most likely done matching exercises before, so it was only natural for them to confirm their beliefs concerning the usefulness of matching exercises.

6. LIMITATIONS

Our study is not devoid of limitations. The most salient one is the number of the questionnaire items used to measure the acquisition of technical vocabulary: per teaching module, there were two such items, one allowing to examine the acquisition of receptive vocabulary, and the second one – of productive vocabulary. Although the results show certain tendencies in terms of the usefulness of matching exercises, the numbers are not statistically significant to allow for more generalisable conclusions. The second limitation concerns the topics chosen: it would have been more preferable to select the topics similarly (un)familiar to students in order to have objectively comparable results.

7. CONCLUSION

Far from being an advocate of matching exercises, we included them as control items in our course of English for psychology, designed within the framework of our PhD research. To our surprise, matching exercises seem to be helpful in the study of technical vocabulary, and what is more – they are perceived as such by students. They can be used as a warm-up activity to start a class: when students enter the classroom, they are more often than not agitated and have difficulty getting to work, so doing a traditional activity individually could help teachers bring their students to the reality of their class. Matching exercises are proven beneficial mostly for the study of receptive vocabulary, and they lead to more satisfying results when the visual modality is employed. Even though students do not appreciate doing them, they still find such exercises useful. Finally, matching exercises are easy to design, and they do not require much classroom time to be accomplished. So, if you are hesitant to use matching exercises in your classes, do not precipitate to eliminate them completely.

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Appendix A

Activity 1: Types of Agnosia

Instructions: *The exercise describes different types of agnosia. Try to match the descriptions with the type names.*

associative agnosia – sensory agnosia – prosopagnosia – visual object agnosia – colour agnosia – integrative agnosia – auditory sound agnosia – simultanagnosia – pure word deafness – apperceptive agnosia – optic aphasia – amorphognosia– ahylognosia

1. A person cannot recognize the meaning of visually presented objects, but sometimes, recognition is better for real objects than for pictures or line drawings. _____
2. A residual category of patients who have difficulty appreciating the nature or name of colour they see. _____
3. The patient experiences an inability to comprehend spoken language, but can read, write, and speak in a relatively normal manner. _____
4. A person is unable to appreciate various characteristics of heard music though the perception of pitch, harmony, timbre, intensity and rhythm may be affected to different degrees or in various combinations. _____
5. A form of visual agnosia in which a person cannot reliably name, match, or discriminate visually presented objects, despite adequate elementary visual function (visual fields, acuity, and colour vision). _____
6. _____ refers to impaired recognition of the size and shape of objects.
7. _____ refers to impaired recognition of the distinctive qualities of objects such as weight, density, texture, and thermal properties.
8. _____ is an inability to comprehend meaning of common environmental sounds, with relative sparing of speech comprehension.
9. A form of visual agnosia in which one retains the ability to recognize elements of objects but is unable to integrate these elements together into comprehensible percept. _____
10. _____ is characterized by an inability to appreciate the overall meaning of a complex picture or stimulus, with preserved perception of isolated elements or details within the stimulus.
11. A form of visual agnosia in which a person cannot use the derived perceptual representation to access stored knowledge of the object's functions and associations but is able to copy and match the drawing even though unable to identify it. _____
12. A condition in which a person cannot name a visually presented object, despite being able to indicate the identity of the object through gesture and sort the visual stimuli into categories. _____
13. A form of visual agnosia in which a person cannot recognize familiar faces, despite adequate elementary visual function (visual fields, acuity, and color vision). _____

Appendix B

Activity 2: Types of Agnosia

Instructions:

The exercise describes different types of agnosia. Try to match the descriptions you will hear with the type names.

associative agnosia – sensory agnosia – prosopagnosia – visual object agnosia – colour agnosia – integrative agnosia – auditory sound agnosia – simultanagnosia – pure word deafness – apperceptive agnosia – optic aphasia – amorphognosia– ahylognosia

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____

Appendix C

Activity 1: Types of Memory and Memories[10]

Instructions:

Match the types of memory with their definitions.

flashbulb	*short-term*	*implicit*	*prospective*	*false*	*reconstructive*
declarative	*semantic*	*echoic*	*retrospective*	*iconic*	*autobiographical*
long-term	*explicit*	*episodic*	*procedural*	*working*	*non-declarative*

	a form of long-term memory that involves knowing that something is the case and generally involves conscious recollection; it includes memory for facts and memory for events
	memory that involves conscious recollection of information
	forms of long-term memory that influence behaviour but do not involve conscious recollection; e.g. priming and procedural memory
	memory that does not depend on conscious recollection
	a form of long-term memory concerned with personal experiences or episodes that occurred in a given place at a specific time
	a form of long-term memory consisting of general knowledge about the world, concepts, language, and so on
	skill learning refers to the gradual improvement of performance with practice that generalises to a range of stimuli within a domain of processing (motor skills are important in everyday life: for example, they are needed in word processing, writing, and playing a musical instrument)
	memory for the events of one's own life
	vivid and detailed memories of dramatic events
	memory for events, words, people, and so on encountered or experienced in the past
	remembering to carry out intended actions
	a form of recollection in which some parts of the information recalled are accurate and some parts of the information are inserted from other sources where recollection is missing the data. This seems to occur in most long, term memories for events
	a hypothesized information store in the brain which lasts indefinitely and has no limit on its capacity
	a hypothesized information storage system of a limited capacity

[10] Eyseneck, M. W., & Keane, M. T. (2010). *Cognitive psychology: A student's handbook.* Hove: Psychology Press. Matsumoto, D. (Ed.). (2009). *The Cambridge dictionary of psychology.* Cambridge: Cambridge University Press.

	which allows material to be used in tasks requiring several seconds and to be repeated for maintenance, as in repeating a telephone number until it is dialed
	recollections of events that have not actually occurred
	a hypothesised very-short-term memory store for visual information which allows the integration of visual information to complete a Gestalt of a scene
	a hypothesised very-short-term memory for sound which allows storage of auditory information long enough for the auditory system to make sense out of it
	hypothesised information storage system containing the information necessary for working on a particular task at a particular time

Appendix D

Activity 2: Types of Memory and Memories[11]

Instructions:

Match the types of memory with their definitions.

flashbulb	*short-term*	*implicit*	*prospective*	*false*	*reconstructive*
working	*semantic*	*echoic*	*retrospective*	*iconic*	*autobiographical*
long-term	*explicit*	*episodic*	*procedural*		

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____

[11] See the footnote in Appendix 3.